

A REDESCRIPTION OF
TIRON ANTARCTICUS K. H. BARNARD, 1932
(CRUSTACEA: AMPHIPODA: SYNOPIIDAE)
WITH AN UPDATED KEY TO THE
SPECIES OF *TIRON* LILJEBORG, 1865

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Abstract.—*Tiron antarcticus* K. H. Barnard (Amphipoda, Synopiidae) is re-described; drawings of the appendages of the type specimen are presented. A new key for *Tiron* Liljeborg is proposed.

The description of *Tiron antarcticus* by K. H. Barnard (1932) is rather superficial and, with its single figure presenting pereopod 7, cannot satisfy the needs of amphipod taxonomists. This description was sufficient to regard the species as an undoubted member of the genus *Tiron* Liljeborg, but J. L. Barnard (1972) in his survey of the family was unable to put *T. antarcticus* in the key to the species of *Tiron* owing to this inadequate description. The present redescription based on the type material aims at filling this gap.

Material and Methods

The type material, the only available for the species, consists of two female specimens in the collection of the British Museum. They were kindly loaned to the author by this institution. Appendages of the right side of the holotype have been dissected and mounted on slides in polyvinyl lactophenol stained with lignin pink. Specimens and slides are deposited in the British Museum (Natural History) of London. Drawings of the appendages were done from temporary glycerol mounts prior to mounting in permanent slides that were used in final study of some details.

Holotype.—♀ 7.5 mm with bristled oostegites, coll. R.R.S. *William Scoresby*, St. WS 33, South Georgia, 21 Dec 1926,

54°59'S, 35°24'W; tow-net (horizontal haul 130 m, bottom 135 m). Fourteen amphipod species in the sample.

Paratype.—♀? immature 6.5 mm (neither oostegites nor penes traceable), coll. R.R.S. *Discovery*, Sta. 175, Bransfield Strait (South Shetlands), 2 Mar 1927, 63°17'S, 59°48'W; large dredge, 200 m, night. Thirty-three amphipod species in the sample. The only other species in both these two samples was *Epimeria excisipes* K. H. Barnard.

Tiron antarcticus K. H. Barnard
Figs. 1-5

Tiron antarcticus K. H. Barnard, 1932:148-149, fig. 86.

Body slender; head galeate and keeled, rostrum and lateral cephalic lobes sharp. Eyes present, rounded, dorsally appressed. Accessory eye not visible, possibly due to the long preservation of the material but note that accessory eyes were not mentioned by K. H. Barnard (1932: "lower eyes not traceable").

Last four (type) or three (paratype) thoracic segments as well as pleon segments excepting the last one, keeled; last thoracic segment and the said five pleon segments produced dorsally as incised teeth, the last two being the largest.

Antennae rather slender, comparatively

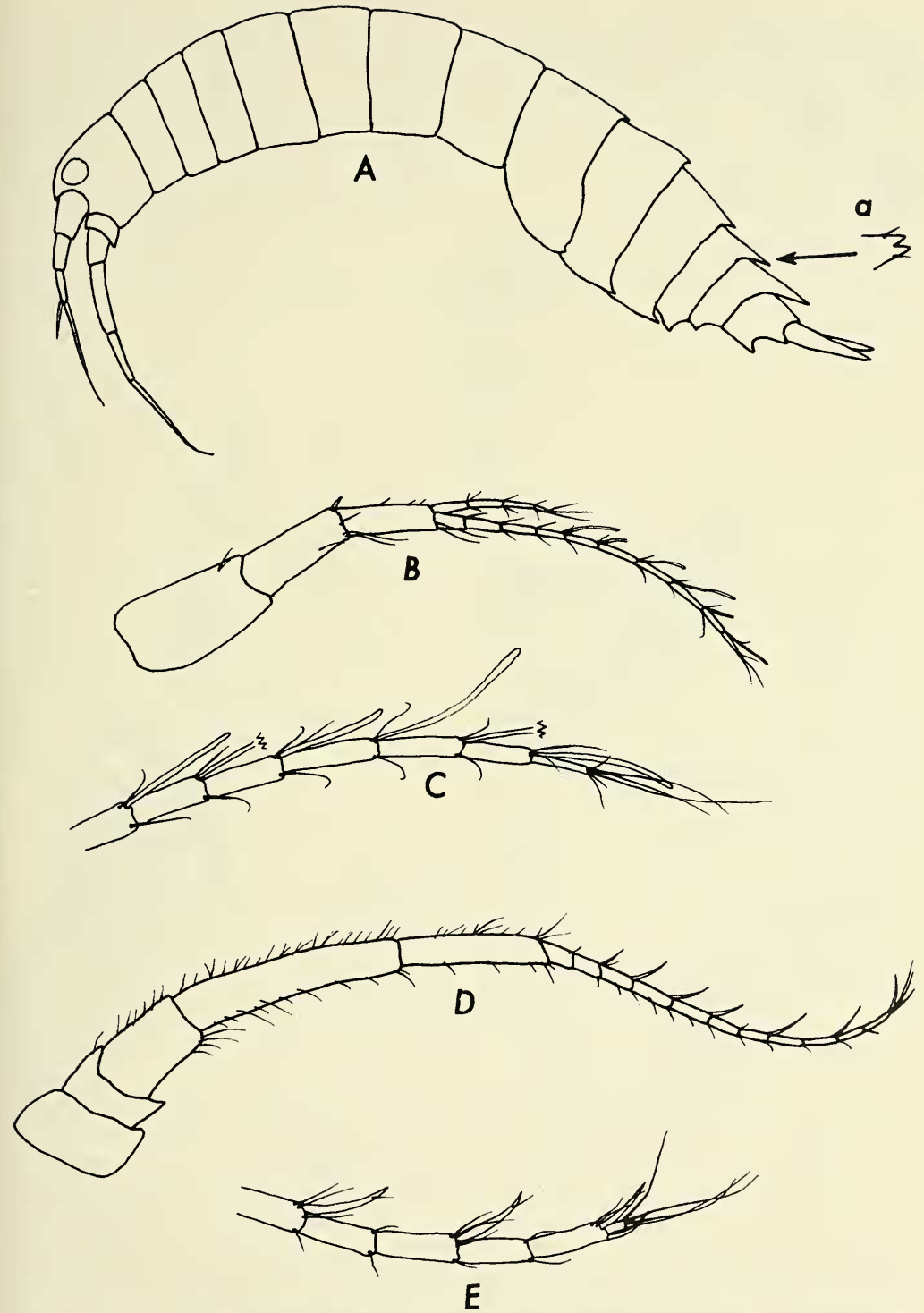


Fig. 1. *Tiron antarcticus*, female, holotype: A, Outline of body, thoracic and abdominal appendages omitted; a, Tooth of urosomite 2, dorsal view; B, Antenna 1; C, Distal part of antenna 1 primary flagellum; D, Antenna 2; E, Distal part of antenna 2 flagellum.

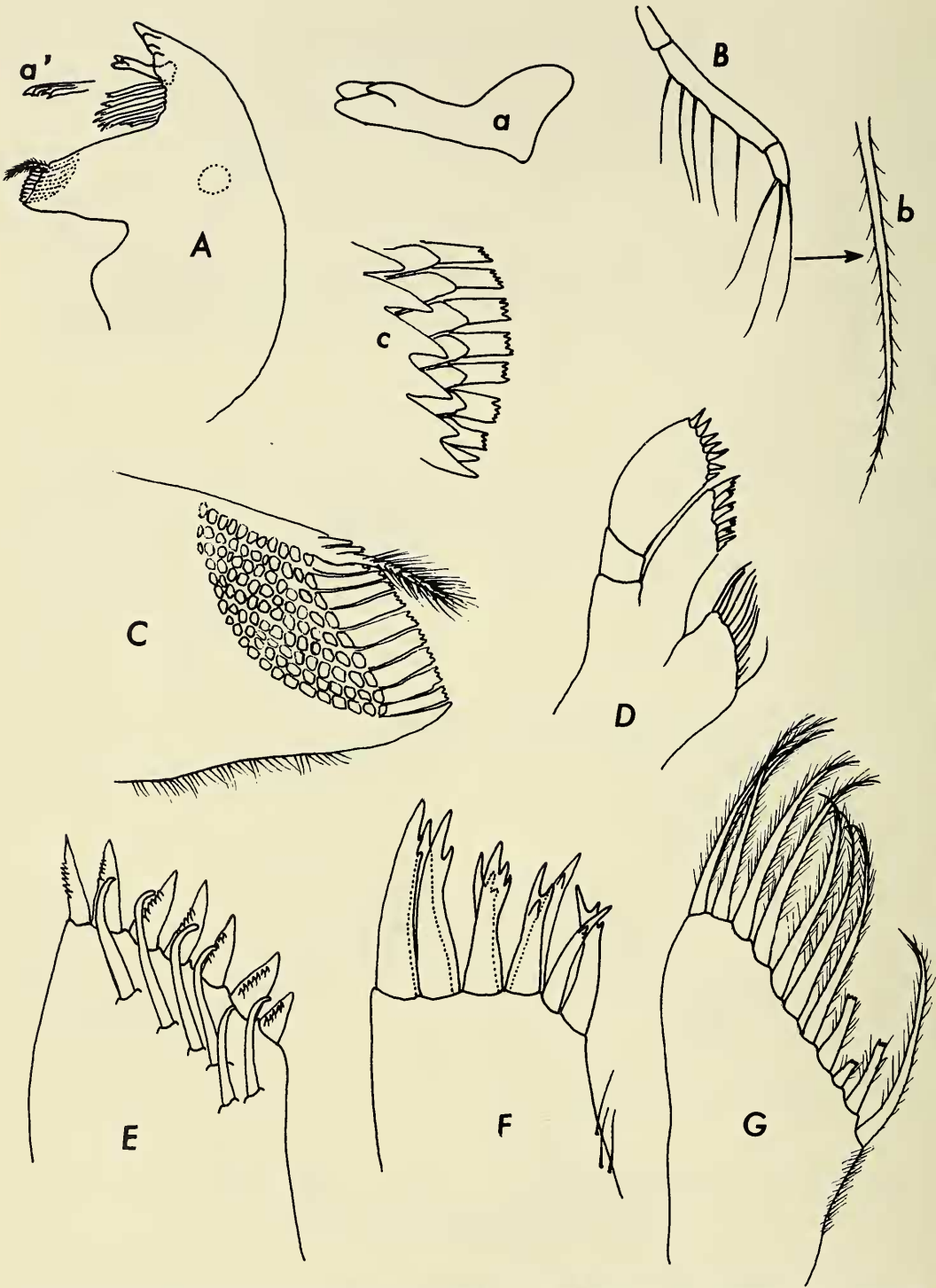


Fig. 2. *Tiron antarcticus*, female, holotype: A, Mandible (place of insertion of mandibular palp indicated by dotted circle); a, Lacinia mobilis; a', Tip of spine of mandibular spine row; B, Mandibular palp; b, Seta of mandibular palp; C, Pars molaris of mandible; c, Edge of pars molaris; D, Outline of maxilla 1; E, Tip of maxillary palp; F, Tip of outer lobe of maxilla 1; G, Tip of inner lobe on maxilla 1.

short. Antenna 1 as long as about one-fourth of body length, antenna 2 as long as about one-third of body. Antenna 1 very weakly setose. Lengths of peduncular articles of antenna 1 in proportions of 14:11:9. Accessory flagellum long, 4-articulate; primary flagellum with 10 articles, several bearing long, slender aesthetascs (6 in type specimen).

Antenna 2 with elongate articles 4 and 5, their proportion as 3:2. Flagellum with 12 articles (in K. H. Barnard's description 10–11 articles) some of which distally armed with long, slender spines.

Mandible with columnar, triturative molar. Edge of molar provided with three rows of variously shaped teeth. Incisor with four teeth, lacinia mobilis with three teeth followed by row of about eight distally dentate parallel sided spines. Mandibular palp inserted at level of molar, 3-articulated; article 2 three times as long as article 1 and nearly four times as long as article 3; articles 2 and 3 armed with five and three long, delicately feathered setae, respectively.

Lower lip (not dissected) with well developed fleshy inner lobes, outer lobes widely separated.

Maxilla 1 with 2-articulate palp ending with marginal row of seven heavy, dentate spines and submarginal row of six curved setae. Inner plate with marginal row of 11 feathered setae, outer plate with row of nine apically dentate spines.

Maxilla 2: inner plate with medial, submarginal row of feathered setae and one more or less parallel marginal row of such setae; apically these rows ending with some curved, smooth setae and other apically forked and delicately serrated on one side. Outer plate apically with double row of mostly smooth and occasionally curved setae; some feathered setae bordering these rows from inner and outer sides.

Maxilliped with 5-articulate palp. Inner and outer plates apically with several characteristic robust, falcate spines.

Coxae 1–4 suboval to trapezoidal; coxa 4 dominated by coxa 3; coxae 5 and 6 divided by excavation into anterior and posterior

lobes, coxa 7 small, pear-shaped. Coxae 1–3 with ventral margins rather richly setose, remaining coxae only with several short setules.

Pereopods 1 and 2 (gnathopods) simple. Article 6 (propus) narrow and elongate with posterior margin armed by several stout, feathered setae. Article 5 (carpus) especially long, nearly twice as long as article 6, densely setose on posterior margin but nearly naked anteriorly. Posterior margin of propus with row of spiny spines. Article 2 (basis) long and narrow, rather densely setose on both margins.

Pereopods 3 and 4 slender, weakly setose, with articles 4, 5 and 6 (merus, carpus and propus) armed posteriorly with some spines.

Pereopods 5–7 subequal in length, but pereopod 6 is longest, these appendages shiny, especially their articles 4, 5 and 6. Articles 2 and 3 of pereopod 6 rather densely setose anteriorly. A distinct increase in the size (width) of articles 2 (basis) and 4 (merus) observed in the sequence from pereopod 5 to pereopod 7; these articles in pereopod 7 with large, overhanging posterodistal lobes. Article 2 (basis) in pereopod 7 posteriorly crenulate with short setules; article 4 (merus) richly armed posteriorly with several groups of spines.

Dactyls of all pereopods ordinary, elongate, with subapical spine and short wire seta.

Six pairs of subovate coxal gills (II–VII pereon segments) and four pairs of oostegites (II–V).

Epimera 1–3 on their posterior margin with increasing number of notches with short setules. Surface of epimera near lower and posterior margins with delicate pilosity. Such pilosity also observed in some other places like outer margin of telson, distal parts of pereopods, mouthparts, etc. Postero-inferior angles of epimera distinctly pointed, this being not exactly consistent with original description of K. H. Barnard (1932: "with a very slightly produced point").

Pleopods normally developed with multiarticulated rami fringed with long feath-

ered setae. Retinaculum composed of two hooked spines and robust feathered seta.

Uropod 1 distinctly longer than uropod 2; in both uropods peduncle and rami armed with spines; exopodites shorter than endopodites by $\frac{1}{4}$ to $\frac{1}{3}$.

Uropod 3 with subequal lanceolate rami twice as long as peduncle. Exopodite 1-articulate, armed mainly with spines; inner margin with some short, feathered setae. Outer margin of endopodite naked, inner margin proximally with long feathered setae (majority of these setae broken in the type specimen but regular row of long feathered setae present in paratype), distally with spines.

Telson fully cleft, long, as long as two last pleon segments and nearly reaching apex of third uropods. Each lobe of telson with row of eight small spines, last one inserted apically in notch. Some few small setules present on upper surface.

Discussion

The nomenclature of *Tiron* species is disordered. The gender of this genus is masculine, the generic name coming from Greek "τερωων" (Liljeborg 1865). Therefore, the proper endings of adjectives are "-us" and not "-um" or "-a." According to the International Code of Zoological Nomenclature (1961: art. 30 on the agreement in gender) one should amend the following names of species of *Tiron*:

biocellata to *biocellatus*
intermedia to *intermedius*
spiniferum to *spiniferus*.

One feature that is considered to be of taxonomic importance was wrongly described for *T. antarcticus* by K. H. Barnard (1932) and then repeated in the diagnosis of this species by J. L. Barnard (1972), namely, the dorsal telson armament. It was said to consist of 4–5 "setules" whereas in fact on the upper surface of telson in *T. antarcticus* holotype there are seven small spines (excepting the apical eighth one) arranged in a somewhat irregular row.

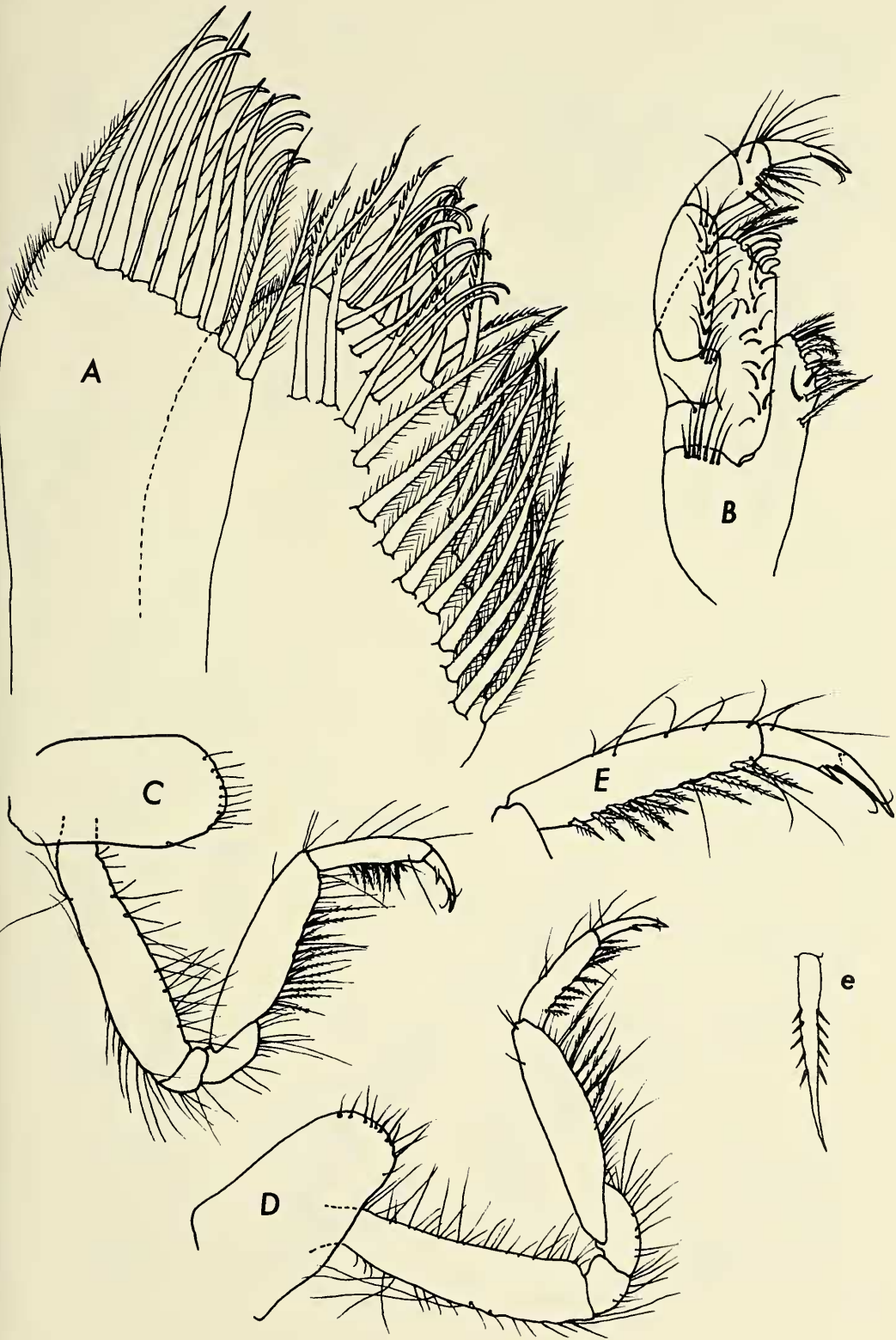
According to J. L. Barnard (1972) *T. antarcticus* resembles *T. biocellatus*, which, on the other hand, has mouthparts very similar to *T. tropakis*. The features of *T. antarcticus* distinguishing it most clearly from *T. biocellatus* are the setose second article of the mandibular palp, the lack of dorsal crenulation of pleonites, and the armament of telson (only weak dorsal setules in *T. biocellatus*). In my opinion, the species most similar to *T. antarcticus* is *T. spiniferus*; it follows both from the description and from the figures by G. O. Sars (1895). Good discriminating characters are here the pleonite serration in *T. spiniferus* lacking in *T. antarcticus*, and smooth hind margin of pereopod 7 basis in *T. spiniferus* versus crenulated and setulose hind margin of this article in *T. antarcticus*.

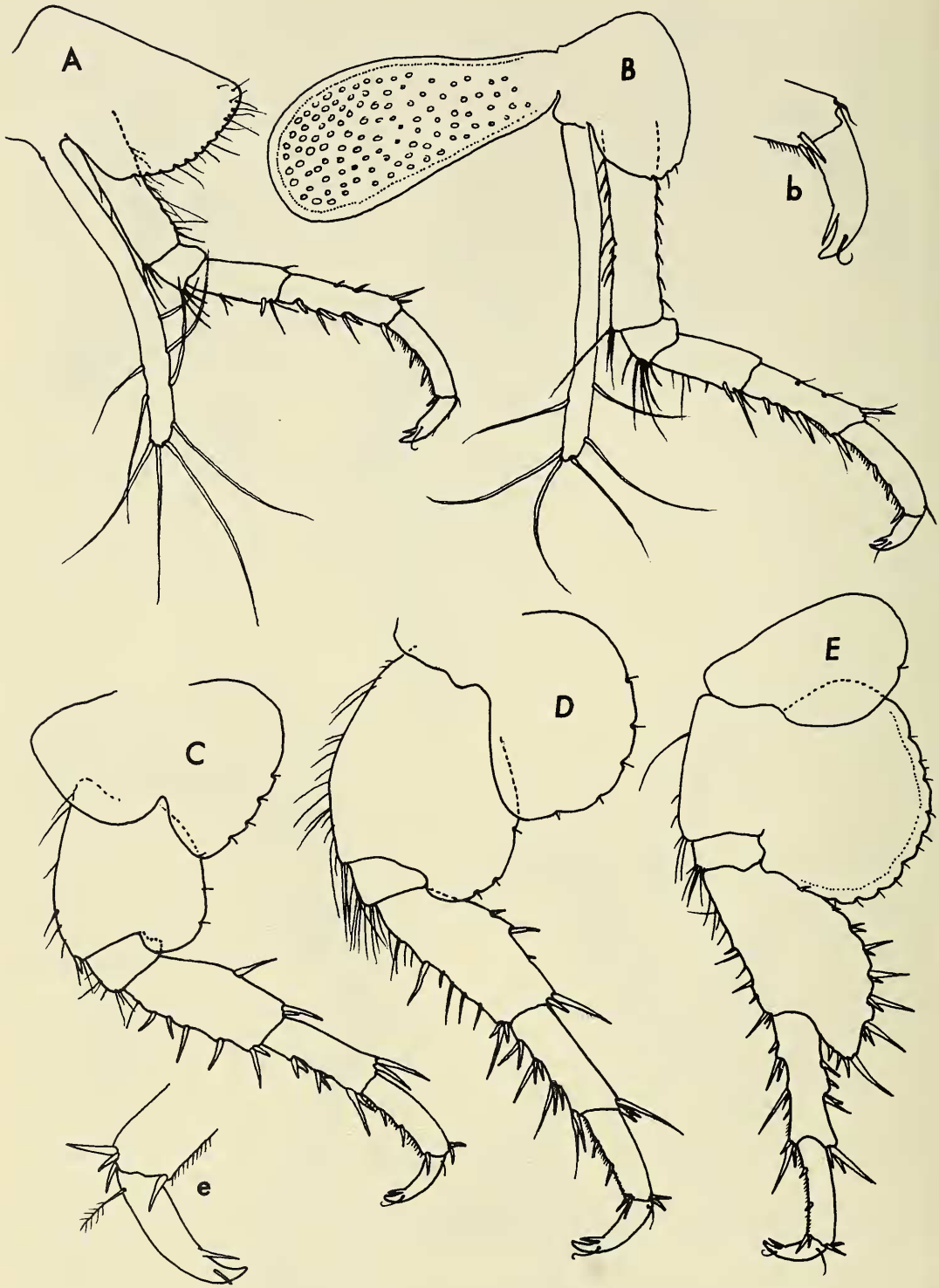
I follow the opinion of Just (1981) that the lack of mandibular palp is not a sufficient reason to create a new genus *Metatiron* Rabindranath (Rabindranath 1972, Ledoyer 1979). Just's survey table of features of eight stubby-legged *Tiron* species clearly shows that one cannot find any other important character to be shared by *Tiron* species lacking mandibular palp.

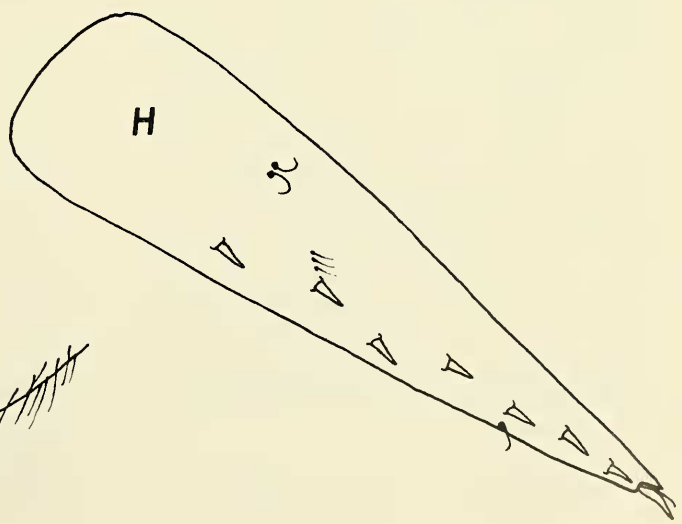
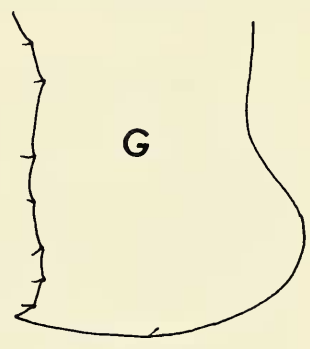
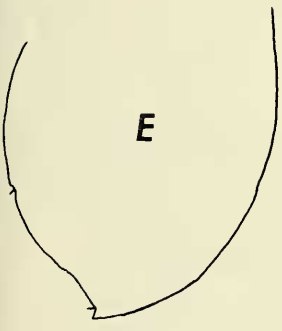
Fig. 3. *Tiron antarcticus*, female, holotype: A, Maxilla 2; B, Maxilliped; C, Pereopod 1 (=gnathopod 1); D, Pereopod 2 (=gnathopod 2); E, Propus and dactylus of pereopod 2; e, Spine on propus of pereopod 2.

Fig. 4. *Tiron antarcticus*, female, holotype: A, pereopod 3 with oostegite; B, Pereopod 4 with coxal gill and oostegite; b, Dactylus of pereopod 4; C, Pereopod 5; D, Pereopod 6; E, Pereopod 7; e, Dactylus of pereopod 7. P. 116.

Fig. 5. *Tiron antarcticus*, female, holotype: A, Retinaculum of pleopod 2; B, Uropod 1; C, Uropod 2; D, Uropod 3; E–G, Epimera 1–3; F, Posterodistal part of epimeron 2; H, Telson (half). P. 117.







On the other hand the diagnosis of *Tiron* by J. L. Barnard (1972, p. 83) should be amended by changing the information: "mandible with palp" to "mandible with or without palp," since 5 of 12 known species (*T. bellairsi*, *T. brevidactylus*, *T. caecus*, *T. triocellatus* and *T. tropakis*) lack mandibular palp.

I propose also two other small amendations to J. L. Barnard's diagnosis of *Tiron* (p. 83):

1) to add "usually" in the note that "hands (propus—K. J.) elongate, linear, lacking distinct spines"—since distinct spines are present in *T. brevidactylus* (see Rabindranath 1972);

2) to add "or overreaching" in the note: "uropod 1 reaching apex of uropod 2"—since this is the case at least in *T. antarcticus*, *T. bellairsi*, *T. brevidactylus* and *T. spiniferus*.

Key to the Genus *Tiron*

The key presented below is based on the literature data and mainly on the key by J. L. Barnard (1972) and the above mentioned table of Just (1981). The key is updated in the sense that four species are added—namely *T. caecus* Ledoyer, 1979, *T. bellairsi* Just, 1981, *T. triocellatus* Goeke, 1982 and the herein redescribed *T. antarcticus* K. H. Barnard. I have avoided using the feature of accessory eye since I believe that it can be overlooked in long preserved material due to fading. The key presented here will surely need further improvements since for many species we lack data on their morphological variability and sexual dimorphism. One should mention, for instance, that even such a seemingly conservative feature as the condition of the inner lobe of maxilla 1 can be unexpectedly sexually dimorphic as in *T. brevidactylus* where females have four setae and males none (Rabindranath 1972).

1. Pereopods 3–7 with stubby dactyls 2

- Pereopods 3–7 with ordinary, claw-shaped dactyls 10
- 2. Mandibular palp present 3
- Mandibular palp absent 4
- 3. Rami of uropod 3 pointed; outer plate of maxilliped normal, ovate 8
- Rami of uropod 3 truncate; outer plate of maxilliped with apical excavation guarded by falcate wings *T. thompsoni*
- 4. Telson with at least several subapical spines 5
- Telson lacking subapical spines 6
- 5. Posterior margin of basis of pereopod 7 with setules; accessory flagellum with five articles *T. tropakis*
- Posterior margin of basis of pereopod 7 smooth, without setules; accessory flagellum with two articles *T. caecus*
- 6. Palp of maxilla 1 slender, much shorter than outer plate; apical spines of uropod 3 exopodite long, nearly one-half of this article length *T. bellairsi*
- Palp of maxilla 1 stout, longer than outer plate; apical spines of uropod 3 exopodite short, many times shorter than this article length .. 7
- 7. Maxillary palp armed with spines and setae at tip only; basis of pereopod 7 lacking special double row of facial setules *T. brevidactylus*
- Maxillary palp armed with setules along major part of its outer margin; basis of pereopod 7 with special double row of facial setules *T. triocellatus*
- 8. Telsonic medial spine rows absent *T. altifrons*
- Telsonic medial spine rows present 9
- 9. Basis of pereopods 6 and 7 with posterior submarginal row of long, plumose setae *T. intermedius*
- Basis of pereopods 6 and 7 lacking special row of setae *T. australis*

10. Posterior margin of basis of pereopod 7 crenulate and setulose 11
 – Posterior margin of basis of pereopod 7 smooth *T. spiniferus*
11. Telsonic lobes with row of small spines; article 2 of mandibular palp with several long setae *T. antarcticus*
 – Telsonic lobes with at most one subapical spine; article 2 of mandibular palp lacking setae
 *T. biocellatus*

Acknowledgments

I am greatly indebted to the staff of the Department of Zoology, British Museum (Natural History), London, and namely to Dr. R. Lincoln, Mr. S. H. Halsey, Mrs. J. Ellis and Mrs. A. Gurney, first for entrusting me with the study of the type specimens of *Tiron antarcticus* and second for their patience in vast but courteous correspondence caused by my too long keeping of the material.

Thanks are due to Dr. J. L. Barnard, Smithsonian Institution, Washington, D.C., for his precious critical comments to this text and for his friendly help.

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